



Doc. No.:

Issued Date: Jun.18 2007

Model No.: M220Z1-C03

Approval

TFT LCD Approval Specification

MODEL NO.:M220Z1-C03



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REVISION HISTORY

Version	Date	Section	Description
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1. GENERAL DESCRIPTION

1.1 OVERVIEW

The M220Z1-C03 is a 22-inch wide LCD cell with thin film transistors as active elements and contains 1680x1050 pixels. Each pixel is divided into red, green and blue dot, which are arranged in vertical stripe. The cell is normally white mode, and can be applied to the transmission type display. Backlight unit (BLU) and circuit board for the cell are not built in.

1.2 FEATURES

- Wide viewing angle
- High contrast ratio
- Fast response time
- WSXGA+ (1680 x 1050 pixels) resolution

1.3 APPLICATION

- LCD Monitor
- LCD TV

1.4 GENERAL SPECIFICATIONS

Item		Specification	Unit
Max Panel Dimension (TFT)		485.26 X 307.6	mm
Glass thickness(TFT/ CF)		0.7/ 0.7	mm
Active Area		473.76 (H) x 296.1 (V) (22.0" diagonal)	mm
Driver Element		a-si TFT active matrix	-
Pixel Number		1680X R.G.B X 1050	pixel
Pixel Pitch		0.282 (H) X 0.282 (V)	mm
Pixel Arrangement		RGB vertical stripe	-
Transmissive Mode		Normally white	-
Surface Treatment		Hard coating (3H), AG (Haze 25%)	-
Polarizer Type		E -Wide View	-
Polarizer Dimension	TFT	478.16 X 300.2	mm
	CF	480.76 X 303.1	mm
Polarizer Thickness	TFT	0.21	mm
	CF	0.21	mm
Weight		580 (Max.)	g



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3. Suggestive Driving Condition

Item			Min.	Typ.	Max.	Unit
Driving Voltage	V_G	On	23.17	24.43	25.17	V
		Off	-7.06	-6.846	-6.66	V
	V_D	B	Gam1	12.242	-	V
			Gam14	0.291	-	V
		W	Gam7	6.698	-	V
			Gam8	5.988	-	V
	V_{COM}	Center	5.52	5.6	5.68	V



4. PANEL PIN DEFINITION

4.1 DATA PIN DEFINE

pin number	TAB1	TAB2~7	TAB8
1	DUMMY	DUMMY	DUMMY
2	DUMMY	DUMMY	DUMMY
3	DUMMY	DUMMY	DUMMY
4	DUMMY	DUMMY	DUMMY
5	Test	DUMMY	DUMMY
6	Test	DUMMY	DUMMY
7	Test	DUMMY	DUMMY
8	Test	DUMMY	DUMMY
9	LR	DUMMY	DUMMY
10	XAO	DUMMY	DUMMY
11	OE	DUMMY	DUMMY
12	CPV	DUMMY	DUMMY
13	Test	DUMMY	DUMMY
14	STV2	DUMMY	DUMMY
15	VSS	DUMMY	DUMMY
16	VSS	DUMMY	DUMMY
17	VDD	DUMMY	DUMMY
18	VDD	DUMMY	DUMMY
19	VEE	DUMMY	DUMMY
20	VEE	DUMMY	DUMMY
21	DUMMY	DUMMY	DUMMY
22	Vgl	DUMMY	DUMMY
23	Vgl	DUMMY	DUMMY
24	Vgl	DUMMY	DUMMY
25	Vgl	DUMMY	DUMMY
26	DUMMY	DUMMY	DUMMY
27	Vgh	DUMMY	DUMMY
28	Vgh	DUMMY	DUMMY
29	Vgh	DUMMY	DUMMY
30	Vgh	DUMMY	DUMMY
31	DUMMY	DUMMY	DUMMY
32	Vst	Vcom	Vcom
33	Vst	Vcom	Vcom
34	Vcom	Vcom	Vcom
35	Test	Test	Test
36	DUMMY	DUMMY	DUMMY
37	DUMMY	DUMMY	DUMMY
38~352	OUT1~315	OUT1~315	OUT1~315
353~364	DUMMY	DUMMY	DUMMY
365~679	OUT316~630	OUT316~630	OUT316~630
680	DUMMY	DUMMY	DUMMY
681	DUMMY	DUMMY	DUMMY
682	Test	Test	Test



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683	DUMMY	DUMMY	Test
684	Vcom	Vcom	Vcom
685	Vcom	Vcom	Vst
686	Vcom	Vcom	Vst
687	DUMMY	DUMMY	Vgl
688	DUMMY	DUMMY	DUMMY
689	DUMMY	DUMMY	Vcom
690	DUMMY	DUMMY	Vcom
691	DUMMY	DUMMY	Test
692	DUMMY	DUMMY	Test
693	DUMMY	DUMMY	Vcom
694	DUMMY	DUMMY	Vcom
695	Test	Test	Test
696	Test	Test	Test
697	DUMMY	DUMMY	DUMMY
698	DUMMY	DUMMY	DUMMY
699	DUMMY	DUMMY	DUMMY
700	DUMMY	DUMMY	DUMMY

Note: Test pin is recommend for floating



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5. OPTICAL CHARACTERISTICS

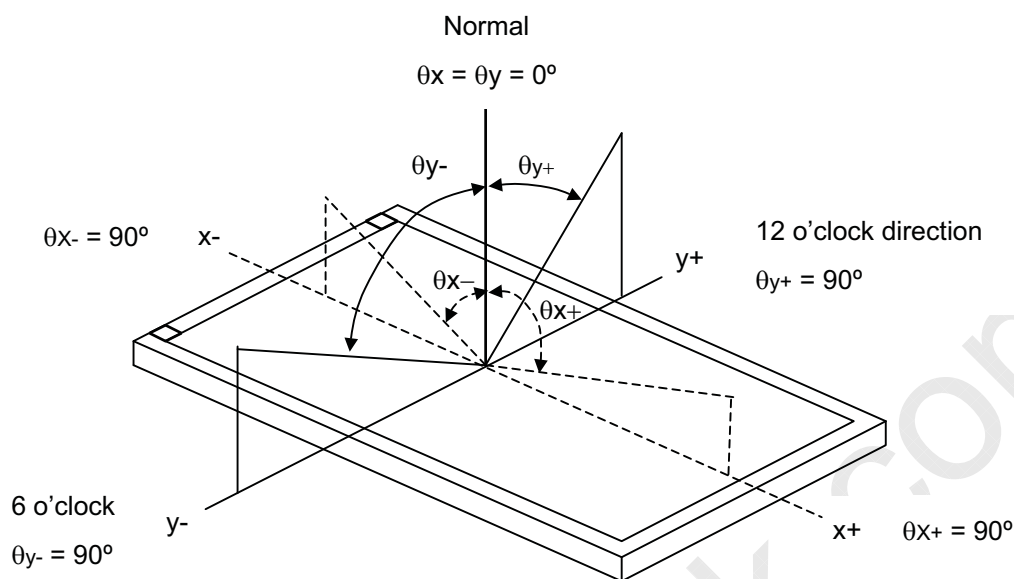
5.1 TEST CONDITIONS

Item	Symbol	Value	Unit
Ambient Temperature	Ta	25±2	°C
Ambient Humidity	Ha	50±10	%RH
Gamma voltage	-	Refer to Item 3 driving condition	V
Vcom	-	most suitable Vcom	V

5.2 OPTICAL SPECIFICATION

ITEM	Symbol	Condition	MIN.	TYP.	MAX.	UNIT	NOTE
------	--------	-----------	------	------	------	------	------

Note (2) Definition of Viewing Angle (θ_x , θ_y):



Note (3) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

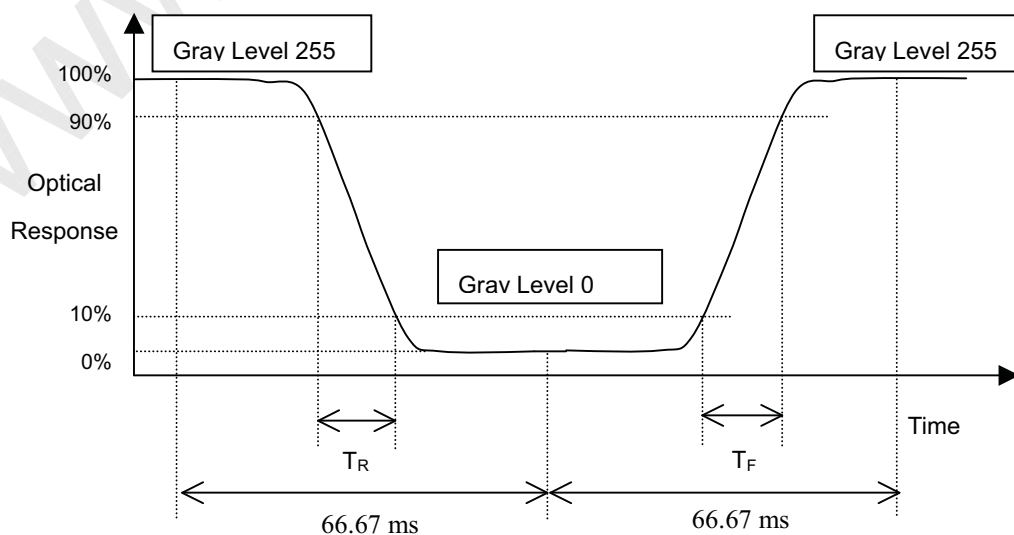
L255: Luminance of gray level 255

L 0: Luminance of gray level 0

$$\text{CR} = \text{CR} (5)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (7).

Note (4) Definition of Response Time (T_R , T_F):



Note (5) Definition of Luminance of White (L_c):

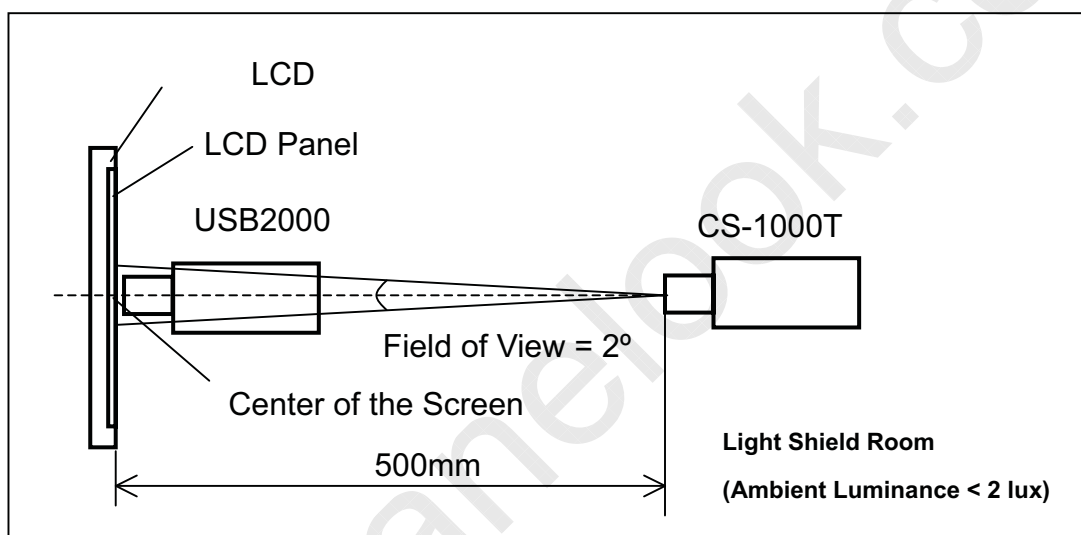
Measure the luminance of gray level 255 at center point

$$L_c = L(5)$$

$L(x)$ is corresponding to the luminance of the point X at Figure in Note (7).

Note (6) Measurement Setup:

The LCD module should be stabilized at given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.

**Note (7) Definition of Transmittance Variation ($\delta T\%$):**

Measure the transmittance at 9 points

$$\delta T\% = \frac{\text{Maximum [L (1), L (2), \dots, L (12), L (9)]}}{\text{Minimum [L (1), L (2), \dots, L (12), L (9)]}}$$



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Note (8) Definition of Transmittance (T%):

Module is without signal input.

Luminance of LCD module



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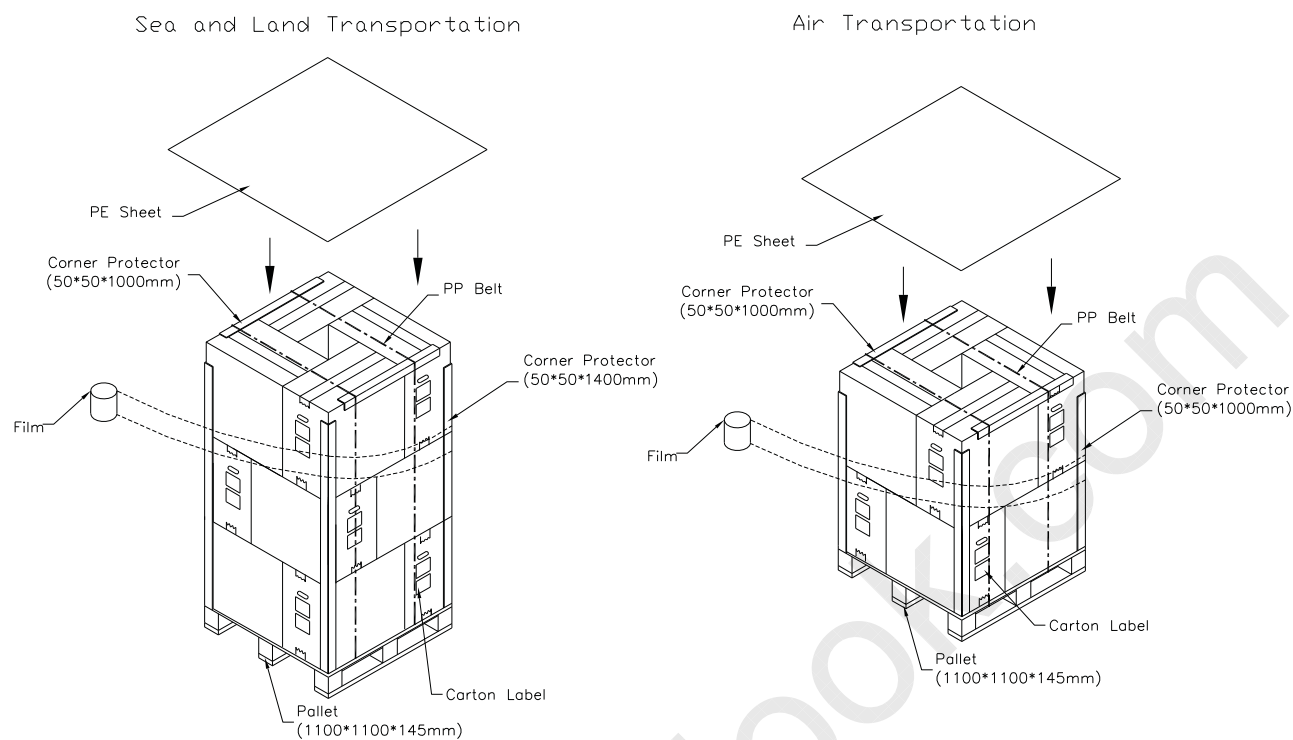


Figure. 6-2 Packing method

7. DEFINITION OF LABEL

1. Model Name: M220Z1- C03
2. Panel Type: version control
3. Quantity: 20pcs / Dense Pack Box
4. Case ID: serial number.
5. Note: Notification, if necessary.
6. Barcode: Case ID in code39 format

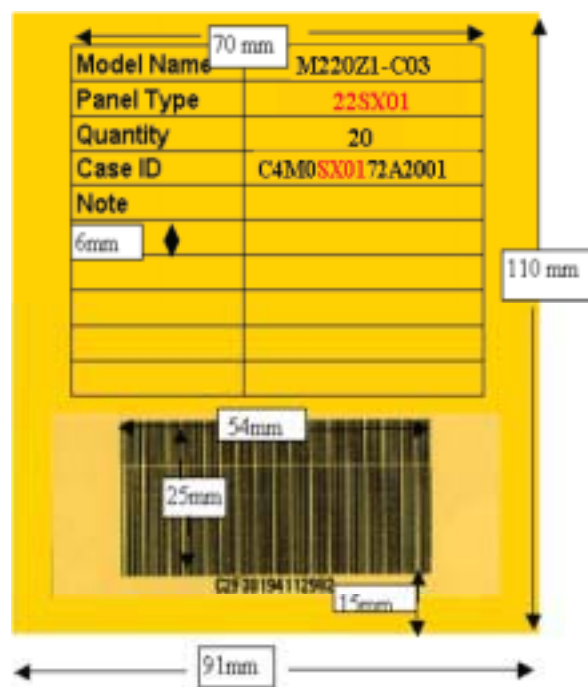


Figure. 7-1 Carton Label



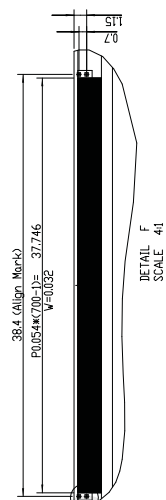
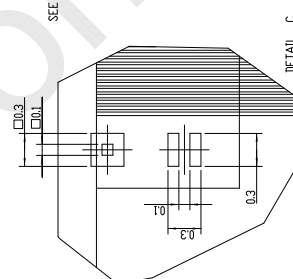
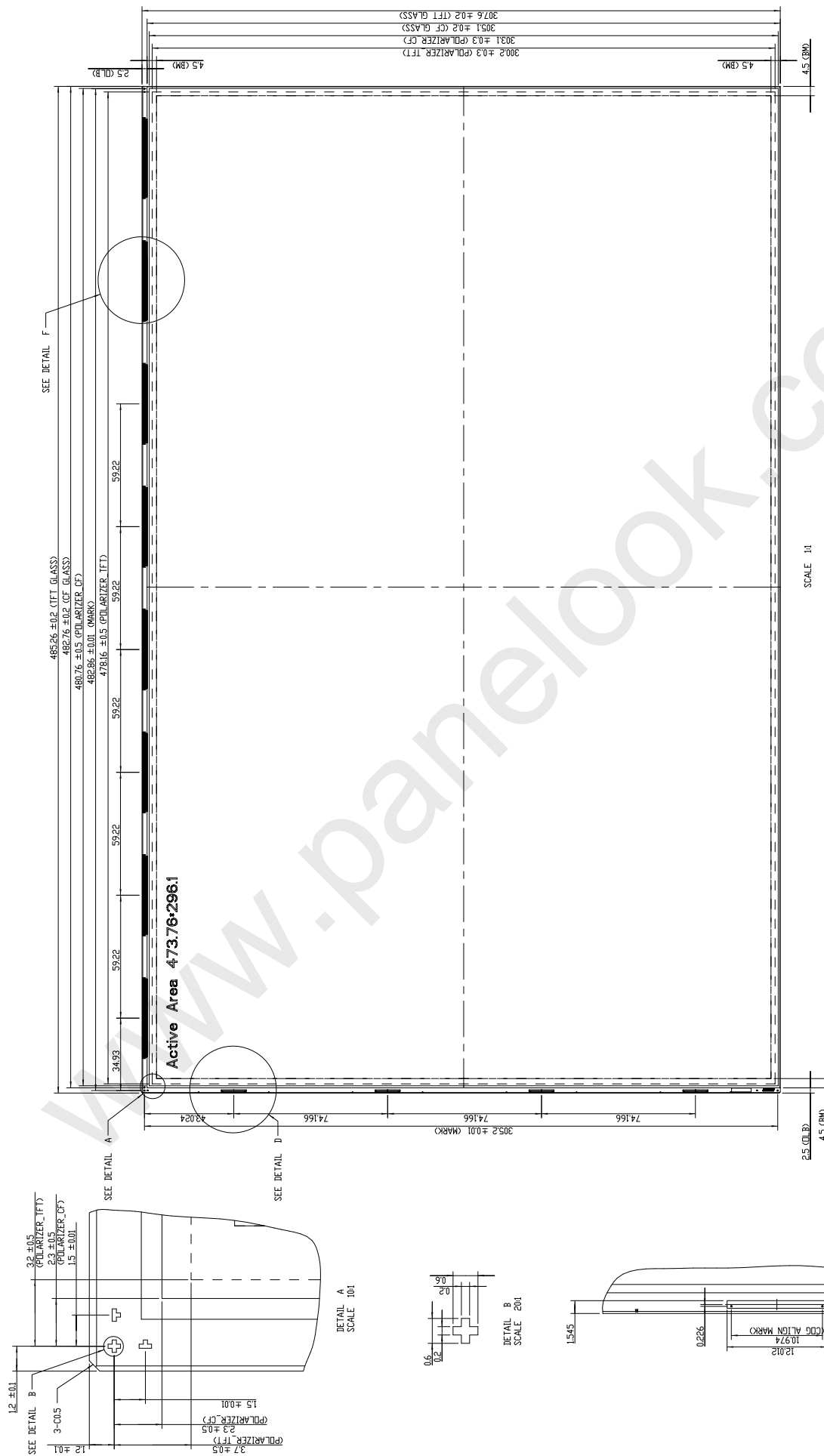
8. PRECAUTIONS

8.1 ASSEMBLY AND HANDLING PRECAUTIONS

1. Do not apply rough force such as bending or twisting to the cell during assembly.
2. To assemble or install cell into customer's module can be only in clean working areas. The dust and oil may cause electrical short or worsen the polarizer.
3. It's not permitted to have pressure or impulse on the module because the LCD panel and Backlight will be damaged.
4. Use a soft dry cloth without chemicals for cleaning, because the surface of polarizer is very soft and easily scratched.
5. It is dangerous that moisture come into or contacted the LCD panel, because moisture may damage TFT circuit.
6. High temperature or humidity may reduce the performance of cell. Please store LCD cell within the specified storage conditions.

8.2 SAFETY PRECAUTIONS

1. If the liquid crystal material leaks from the panel, it should be kept away from the eyes or mouth. In case of contact with hands, skin or clothes, it has to be washed away thoroughly with soap.



TITLE: PAD_DATA_M22021-01		Drawing No. M220220A		20 REV. A	
Approved	BILL SHEU	Part No. TBD	Sheet 1 / 1		30 REV. 11+
Checked	JERRY CHANG	Material TBD	Date 25-Apr-2006		
Drafter	ROCKY YANG		Scale 1:1		
Designer	ROCKY YANG				
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